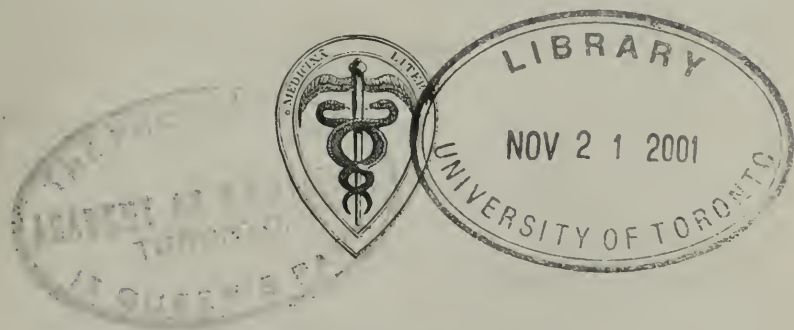


THE
OPHTHALMIC REVIEW

A MONTHLY RECORD OF OPHTHALMIC
SCIENCE

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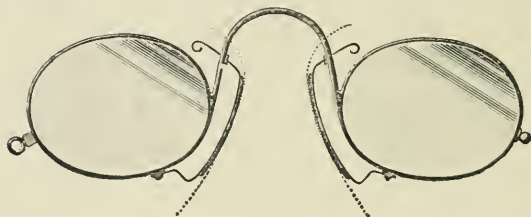
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THE INTERRUPTED BLOOD COLUMN IN THE VESSELS OF THE EYE.

BY HARRY FRIEDENWALD, A.B., M.D.

LECTURER ON OPHTHALMOLOGY AND OTOTOLOGY, COLLEGE OF
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IN 1853, in his *Ueber Staar und Staaroperationen*, Ed. Jäger related a case of sudden blindness in which the ophthalmoscopic examination revealed a peculiar blood current in the arteries and veins of the retina. He described it as a more or less rapid, interrupted, non-rythmical progression of the unevenly coloured blood-current. The case belongs to the class, first diagnosed and explained by von Graefe, of *embolism of the arteria centralis retinae*. Since then a number of cases of this condition have been published in which similar observations were made. Mauthner¹ devotes a special chapter to this phenomenon in his *Lehrbuch der Ophthalmoscopie*, and cites the observations of von Graefe, Liebreich and Steffan in cases of embolism of the central retinal artery, of detachment of the retina, of optic neuritis, and of cholera. Fischer,² in 1891, collected about thirty cases of embolism of the retinal artery in which the broken blood column was seen in the veins, but only nine in which it had been described in the arteries.

I have observed it in several cases of embolism. The most exquisite case which came under my observation was one of embolism of the superior trunk of the

¹ Vienna, 1868.

² *Ueber d. Embolie der Arteria centralis Retinae*, Leipsig, 1891.

central retinal artery. The patient—a young lady about 25 years of age—was under my care in 1888, while assistant to Professor Hirschberg in Berlin. One eye had been blind for several years—the result of embolism. She presented herself with embolism in the other eye within twelve hours after its occurrence. Even at this time there was considerable œdema of the retina. The superior trunk of the central artery was almost empty (that is, of red contents) up to its division into the superior nasal and temporal branches. It was white except in the middle, where there was a minute red cylinder, making slight vibratory movements synchronous with the pulse. In the superior nasal and temporal branches the blood was broken into small cylinders—red and white alternating—which moved sometimes very slowly, sometimes rapidly (especially after massage of the eyeball). The current moved continuously from the superior temporal branch into the nasal; it was centripetal in the former, centrifugal in the latter.

This condition of the blood current was noticeable only during the first day or two, and then disappeared. In about ten days the apparently normal circulation became re-established in the superior trunk, but without any return of vision in the affected portion of the field.

I have also seen the interrupted blood current in glaucoma. The patient had simple glaucoma in both eyes with marked arterial pulsation, showing certain peculiarities. The right eye was completely blind, and upon it I tried the effects of great pressure in order to find how they accorded with those described many years ago by Donders. In Donders' experiments it was found that by pressing on normal eyes venous pulsation could be induced. Still greater pressure would establish arterial pulsation. In my case the glaucomatous tension was so high that there was already arterial pulsation, and I was curious to know the effect of pressure upon

such an eye. I was much surprised at the result. The wave of pulsation became shorter and more abrupt as the pressure was increased; when the pressure was very high the arterial pulse wave resembled a flash of red, which immediately vanished, leaving the arteries quite empty or very thin—and it was then that the veins showed broken columns of blood similar to those described above in the case of embolism. They moved slowly toward the papilla. As soon as the pressure was diminished they disappeared, and the vessel again seemed normal. This observation was made in 1888. I have recently found that Schnabel likewise noticed this phenomenon in glaucoma.¹

The same breaking up of the column of blood has also been observed under other conditions. Thus it is described as occurring in the retinal veins after death. Gowers² says that “commonly the columns of blood within them soon become interrupted and broken up into segments, which give the vessels a beaded appearance.” Many are familiar with this peculiar appearance from the examination of the eyes of animals recently killed. Thus it is usually seen in pigs’ eyes which have been excised for phantom-operations. I shall refer to this below.

The moving broken blood columns have been seen in the conjunctiva and in the cornea. Donders³ discovered that the blood column of normal conjunctival veins “whose lumen may be twenty times that of the arteries” appears “broken by small spaces containing simple blood plasma without blood corpuscles.” His observations were made with a microscope in sunlight. I was not aware of this fact when my paper on the “Visible

¹ “Contributions to the Knowledge of Glaucoma,” *Archives of Ophth.*, vol. xvi., p. 17 (1887).

² “Medical Ophthalmoscopy,” third American edition, p. 298.

³ *Arch. für Ophthalm.*, vol. xvii., 1, p. 85.

bloodcurrent in newly formed corneal blood vessels" was published.¹ By means of a Hartnack's hand lens I found the same peculiar circulation in the blood vessels of the cornea in various forms of vascular keratitis, and also in the fine conjunctival vessels. It appeared to be in the venules ; it is doubtful whether it is visible in the arterioles. The contents of the vessels seemed to be broken into small parts, in which small red cylinders alternated with colourless intervals. Both varied greatly in their length. The motion of the blood was not regular, it was sometimes continuous, then it would almost cease or stop entirely, or there would be sudden starts and stops.

The microscopic examination² of the pigs' eyes mentioned above shows that the colourless spaces contain no red blood corpuscles, or only a few scattered ones ; these are collected into heaps in the coloured parts. The colourless portions of the vessels are filled with blood plasma, and contain white corpuscles. There is no doubt, I think, about the colourless interspaces having the same composition in the living vessels.

It would appear that the circulating blood in the vessels breaks up into colourless and coloured parts, into parts free from red corpuscles, and parts in which the latter become aggregated in masses, and that this occurs when the current is greatly retarded. This explains its occurrence in all the instances cited above, and it would explain the fact that the phenomenon has been seen much oftener in veins than in arteries. The fact forces us to the conclusion that there is cohesive attraction between the red blood corpuscles, which naturally manifests itself only when the current is very slow.

¹ *Centralblatt für Augenheilkunde*, February, 1888.

² In this Dr. S. Flexner kindly assisted me. I desire here to repeat my thanks for his assistance and valuable suggestions.

G. A. BERRY (Edinburgh). Diseases of the Eye. A Practical Treatise for Students of Ophthalmology. *Edinburgh and London: Young J. Pentland, Second Edition, 1893.*

We congratulate Dr. Berry on the issue within so short a time of a second edition of his valuable treatise, and on the many improvements which he has made in it. The most conspicuous of these is the addition of about fifty new illustrations, most of which are coloured, and nearly all of exceptional artistic excellence. Some of the pictures of the living eye, bearing the initials J. T. M., are of higher quality as regards delicacy of shade and colour than any we have seen before. The artist has avoided the hard diagrammatic style, and has striven to present exactly what he saw. Some new drawings of the healthy fundus, also, bearing the initials A. W. H., are remarkably good. The free introduction of good coloured drawings into the body of the text is a luxury of illustration peculiar to this ophthalmic text book.

Another decided improvement is the placing of an excellent chapter on the systematic examination of the eye at the beginning of the book, instead of near the end. We see less advantage in the dislocation of the chapter on the diseases of the retina and optic nerve. Inflammation and atrophy of the optic nerve and retina now find a place between diseases of the lens on the one hand and diseases of the uveal tract on the other, and they are widely separated from such conditions as toxic amblyopia, hemianopia, &c. In opposition, as we think, to very strong evidence, the author declines to regard tobacco amblyopia as a form of retro-ocular neuritis. He lays no stress on the fact that in certain closely allied but rather more acute forms of amblyopia with central scotoma, the optic papilla shows well-marked congestive changes. Whether he be right or wrong in this, it would seem desirable to place the various affections of the visual nerve apparatus nearer together than they now stand.

As regards the pathology of glaucoma, the author appears to be cautiously advancing towards the generally accepted

views concerning the essential importance of pressure and retention of fluid. His philosophic caution is to be admired. Not so the repetition of objections which have long been answered. For instance, he doubts the importance of a closed filtration angle because it has been found in eyes which are not glaucomatous. The facts of the case need hardly be repeated, but we would suggest to Dr. Berry the following simile. Let the steam pipe of a boiler be closed while the boiler is in full work; the steam pressure will rise. But one does not expect a rise of pressure if steam is not being generated, or if it is escaping freely elsewhere.

It need not be said that the subjects of refraction and accommodation are dealt with in a thorough and masterly manner. The student of ophthalmology who has the necessary knowledge of mathematics may here dive into some of the profundities of physiological optics, and those who cannot follow the author through all his formulæ may safely pass the small print by and trust to the large for all essential facts. In the chapter on affections of the muscles we find figured and described the excellent tests for latent deviations lately devised by Maddox.

The chapter on operations is introduced as before by a clear statement of the principle and methods of asepsis, and to this the author now adds, wisely as we think, a few words against the over elaborate procedures sometimes advocated. He declares that all that is necessary is a conscientious attention to certain simple precautions against the introduction of septic matter by the hands, lotions, or instruments, and the self-inoculation which may take place from the secretions of the conjunctiva and tear-sac. On the much debated question of iridectomy or no iridectomy in cataract extraction, the author declares in favour of a small iridectomy. He condemns the large and very peripheral iridectomy formerly, and still to some extent, employed, and he admits the beauty of an uncut pupil, but in view of certain risks and difficulties which he considers inseparable from the simple operation, he declares the game to be not worth the candle.

The author's exceptional literary knowledge of his subject and his wide experience are obvious in every part of his work. On debatable subjects he holds opinions of his own, but is never dogmatic. We have no doubt that the success of the second edition will be even greater than that of the first.

J. P. NUEL (Liège). Filamentary Keratitis: second Communication. *Archiv, d'ophthal. Avril, 1893.*

In a former number of the OPTHALMIC REVIEW, (Dec., 1892) we gave an abstract of Nuel's observations on filamentary keratitis, in which he described this affection as a primary one, the cornea being, except for the filamentary growths, of normal appearance. In this paper that part of the subject is dealt with which concerns the growth of filaments from the surface of corneal wounds and ulcers, and a further light is thrown on the manner of origin and growth of these filaments.

A man received a blow by a piece of iron which perforated the cornea, and wounded the iris and lens; the foreign body was removed, the corneal wound closed, with the formation of an anterior synechia and traumatic cataract. The neighbouring part of the cornea became so opaque that the pupil was hidden. On the fifteenth day after the injury, a filament was seen, half a centimetre long, attached to this part of the cornea. The filament, with part of its basal attachment, was removed with a Beer's knife and examined; it was found to consist of a conical base, made up of elongated epithelial cells twisted round each other and forming a rope which bifurcated, and terminated in two bulbous ends containing highly refracting nuclei; surrounding this central rope there was a sheath consisting of a few fibrils enclosing rounded and fusiform cells, mucus and granules. This filament was almost identical in appearance with the filaments described in the last article. There was a similar small filament growing

close beside the large one; in the epithelium surrounding the conical base of the small filament there were four capsules containing highly refractive round bi- and polynuclear cells similar to those found in the bulbous ends of the filaments.

The author next directed his attention to these capsules by removing, a few days later, successive slices of epithelium from this same area of the cornea, till Bowman's membrane was laid bare. The superficial layer of epithelial cells showed nothing remarkable except the large size of some of the cells, but the deeper layer showed several anomalies. In the main it was made up of normal polygonal cells, but scattered among these were capsules like those above mentioned, either isolated or collected into masses containing highly refracting nuclei. The starting point of these capsules is an ordinary epithelial cell, the nucleus of which undergoes division into two or more parts, and the epithelial cells around the capsules are squeezed together to form lines. Each of these capsules forms an elevation on the surface; in one case a capsule was seen developed at one end of an epithelial cell, the other end of which still formed part of the epithelial mosaic. Another change in the epithelium was the appearance, chiefly in the cells of the superficial layers, of highly refracting granules similar to those described by Fuchs in pinguecula; these granules have the same chemical reactions as the encapsuled cells; they appear to be albuminoid, and are to be looked at as products of tissue degeneration.

It is the tendency of each capsule and group of capsules to raise itself above the epithelial level, supported on epithelial cells which, by continuous growth and torsion, form a spiral filament; the majority of the capsules do not result in the formation of filaments, they are probably unable to resist the friction of the lids, and are swept off before having attained any length.

The author has been able to convince himself that certain corneal ulcers with a grey base, tedious in their course, and generally regarded as infecting ulcers, are really produced by an epithelial change analogous to that

described above, forming capsules but not going on to the formation of filaments. The same capsules are formed in the epithelial layer which first closes in incisions in the cornea of the rabbit.

W. T. HOLMES SPICER.

F. DIMMER (Vienna). The Ophthalmoscope and Ophthalmoscopic Diagnosis. *Second Edition*, 1893.

This work may be regarded as a sort of literary sample of the kind of teaching given in the practical ophthalmoscope classes in Vienna University. It is so excellent, both from a scientific and a practical standpoint, that it offers little scope for the comments of a reviewer. The first edition was published about seven years ago, and the present one has been thoroughly revised, and in part rewritten.

The first thirty pages are devoted to the laws of reflection and refraction, by and through various curved surfaces and media, upon a knowledge of which an intelligent use of the ophthalmoscope essentially depends. The next thirty contain a brief description of the ophthalmoscope, and directions for its employment. The innumerable special instruments in the market are not described, the reader being referred to the standard treatises on this subject, and the author contents himself with stating the essentials required in an ophthalmoscope, viz., a plane and concave mirror, a condensing lens, and correcting glasses.

In using the instrument Dimmer advises the student to proceed in the following order. First, focal illumination, then ophthalmoscopic examination of the media, then the inverted and finally the erect ophthalmoscopic examination. Investigation of refraction follows, either by erect image or by retinoscopy.

A few pages are given to a description of the ophthalmoscopic appearances in the normal eye, and we observe that

Dimmer assumes as proved his peculiar theory as to the cause of the light reflex seen on the retinal arteries, viz., that the reflex is the result of a central, more rapidly moving portion of the blood column—an axial stream. That seen in the veins he regards, on the contrary, as being due to a reflection from the surface of the blood column. These views are not at all universally accepted by oculists (*vide* OPTHALMIC REVIEW, 1892, p. 100, and p. 253), and we think Dimmer might have mentioned that other theories to account for the phenomena are still in existence. Our author adopts Halfreich's explanation of the phenomenon of visible venous pulsation, but does here mention the older theories of Donders and Coccius.

The directions for measuring refraction by the erect image are given in minute detail, and Schmidt-Rimpler's ingenious though neglected method of measuring with the inverted image is described. Ten pages are devoted to the principle and practice of skioscopy (retinoscopy), which Dimmer regards as the most satisfactory method of measuring refraction. We are pleased to see that he gives the preference to the plane and not the concave mirror (*vide* OPTHALMIC REVIEW, vol. ii. p. 228), but of course accuracy is equally obtainable with either mirror in competent hands.

The last four chapters of the work (about 100 pages) deal with the ophthalmoscopic diagnosis of diseases and anomalies of the media, the optic nerve, the retina and choroid respectively. The descriptions of the various ophthalmoscopic appearances are succinctly and lucidly written, and may be profitably studied by those engaged in ophthalmoscopic teaching.

ADOLF VOSSIUS (Giessen). Guide to the Use of the Ophthalmoscope. *Third Edition*, 1893.

The first edition of this work appeared in 1885, and the second in 1888. The present differs from the second by the insertion of more numerous illustrations, and of a chapter upon skioscopy (retinoscopy). This particular chapter, however, is the principal blot upon an otherwise satisfactory work, as it does not exhibit that lucidity which should be found in a book written for students. After its perusal we cannot wonder that Vossius considers that this method of estimating refraction requires more time and trouble for its acquisition than the method of the erect ophthalmoscopic image. Dinmer's exposition of skioscopy (*vide supra*), although it presents the uninstructed student with a good deal more optics to digest than that of Vossius, can be comprehended by the average intellect in about one twentieth of the time, and when it is comprehended, the principles of the method, as well as its practice, are understood. We cannot say as much for that of Vossius. The method of Schmidt-Kimpler, too, is not described in sufficient detail to give any practical information, and the readers are very wisely referred to that author's own works to ascertain how the test is to be applied.

The weakness of the work on refraction becomes evident in the section upon astigmatism, the diagnosis of which is to be made by the combined results of the erect and inverted ophthalmoscopic image, a parenthesis being added to the effect that the diagnosis can also be successfully established by skioscopy. The chapters upon the ophthalmoscopic appearances in the normal and in the diseased eye are very complete, and afford the student all the information which should be supplied in a work of the kind.

H. E. JULER (London). *A Handbook of Ophthalmic Science and Practice. Second Edition. London: Smith, Elder & Co., 1893.*

The second edition of this well-known handbook is larger than the first by about a hundred pages. In almost every chapter there is some new matter, and many minor alterations and improvements have been made. The many lithographic drawings of morbid histology which were scattered throughout the first edition are now replaced by photomicrographs, reproduced by one of the facsimile printing processes.

Like its predecessor, the book will certainly be a favourite, for it is practical in its aims, readable, and fully illustrated. It is less strong, perhaps, upon the scientific than on the practical side, giving but little space to the discussion of the essential nature of pathological processes. For example, the author gives excellent clinical descriptions of such conditions as optic neuritis, sympathetic ophthalmitis, and glaucoma, and under the heading *Pathology* he describes briefly the histological changes in each case; but as regards the essential nature of these disorders he is content to reproduce impartially, and in a somewhat fragmentary manner, various theories put forward during the last twenty years.

In one respect the book differs notably from most other recent surgical text-books. The words septic, antiseptic, germ, bacillus, infection, and others of that well-known group have no place in the index, and are rare throughout the book. More important than this, we see nowhere any specific directions for the cleansing of instruments, or any general statement that most of the serious inflammatory troubles which follow operations on the eye-ball are of infective origin and are avoidable by conditions of asepsis. We do not suppose that this omission truly represents the author's position, and we should be sorry to see so good a practical text-book overrun by bacteriology, but some definite statement of the importance of asepsis and of the best methods of obtaining it are very desirable in a manual

of this kind. Under the head of suppurative keratitis, also, about which Leber has lately given us such all-important teaching, we should like to see some positive statement of the influence of infection from without.

Here and there we notice other points which suggest a criticism, for example, the statement on page 421, that in the progressive stages of myopia glasses are not required, but we find the antidote to this somewhat dangerous doctrine on page 471, and we have no desire to look for the few weak points in what, taken as a whole, is a very attractive and trustworthy book.

WARD A. HOLDEN (New York). On Embolism of a Branch of the Central Artery of the Retina.
Archives of Ophthalm., xxii., 1.

The author has recently been fortunate enough to have, under his immediate observation, five cases of embolism of a branch of the central retinal artery. We give short notes of the cases as reported by him.

CASE I.—A man, aged 51, noticed, eight days before he consulted the writer, a sudden blindness in his left eye, which soon afterwards regained its vision. For two days following this recovery, the sight varied, sometimes being better than at others, and then suddenly almost completely failed, a condition in which it has since remained. $V = \frac{4}{200}$ eccentric, in a small field corresponding to an oval portion of the retina between disc and macula. The retinal arteries are rather narrow, the veins on the other hand dilated, the retina is œdematous, except at the periphery, and in a limited patch between the disc and macula, in which area there is a small artery whose circulation seems to be uninterrupted. No heart murmur, but he has been treated for an amyloid kidney supposed to be due to syphilis.

CASE II.—A man, aged 23, who, while violently exerting himself, suddenly lost the sight of his left eye. The next day he found he could see the lower half of objects. This condition has remained unchanged. The case was not seen by the author till eight months after the blindness had occurred. $V = \frac{20}{20}$. Field

shows a superior hemianopsia, the blind portion encroaching somewhat on the lower half of the field to the temporal side. The inferior branch of the central artery is contracted, and shows no pulsation when pressure is exerted on the globe. The upper third of the disc is normal in colour, the middle third is pale, and the inferior third blue and excavated. No heart murmur, but there is a history of albuminaria.

CASE III.—An unmarried woman, aged 34, had noticed, for a year, that with the right eye she could only see the lower half of objects. $V = \frac{2}{20}$. The field showed an irregular superior hemianopsia, which encroached on the lower half, on the nasal side, while on the temporal side it reached a point 15° from the median horizontal line. The inferior retinal arteries were markedly contracted, some apparently being altogether obliterated. It was noted, however, that each was joined by an anastomosing vessel, derived either from a superior retinal artery or from a ciliary vessel, and beyond this point of junction the artery was of comparatively good size. The disc, like that of the last case, was divided into three distinct segments, which, by their difference in colour could be easily separated from each other; thus the upper third was normal, the middle third white and atrophic, and the lower third, where cilio-retinal vessels could be made out, slightly red in tone. The patient had valvular disease of the heart, but of what especial character the report does not say.

CASE IV.—This patient, a married woman of 33, noticed seven days before she saw the author that the vision of her left eye had become very much impaired. The loss of sight has remained unimproved. $V = \frac{4}{200}$ eccentric. Field showed a scotoma in the lower and inner quadrant, and the fixation point was included in this. An embolus is seen in a horizontal twig of the superior papillary artery, which, as it runs outwards towards the macula divides into three small branches, two of these go to the centre and one upwards. There is some retinal œdema near the disc, but the disc itself is of a healthy colour. No cardiac lesion and no albuminuria, but there is a clear history of syphilis, and the patient complains of severe headaches; the pulse is small and feeble. A note as to the condition nine days later says that the œdema of the retina had then disappeared; the macular region was studded with small glistening spots; the disc, in its temporal half, was atrophic, while the field remained as before.

CASE V.—A man, aged 30, noticed, five weeks before, that he could not see the upper part of any object when using his right eye alone. This state has remained unchanged. $V = \frac{2}{20}$. Field shows definite superior hemianopsia, with a sharply marked lower

edge which passes nearly through the fixation point. Inferior branch of central artery is contracted. Lower two-thirds of disc are pale. Cardiac valvular disease.

Commenting briefly on these cases Holden draws attention to the manner in which the central artery divides, and to the result of embolism according to the varied condition of bifurcation. The main artery divides into an upper and lower branch just before or just after it reaches the disc; each of these two branches again splits into a temporal and nasal division near the margin of the nerve entrance. We might, therefore, conclude, says the writer, that the occurrence of an embolus in a branch of the first order would give rise to a sharp superior or inferior hemianopsia and obstruction in a division of the second order a quadrant scotoma. But, he goes on to explain, the matter is not so simple, for in many eyes there is a small artery which runs horizontally inwards to the nasal side, and there is usually one, or there may be more, running outwards towards the macula. Now, these small twigs may spring from the main artery before its bifurcation, or from the first or second set of branches into which it divides. In such a case the nasal twig is usually given off by an inferior branch, and the temporal by a superior.

In Case I. we have an instance of embolism where the small macular artery, which alone is free, must have arisen from a point in the main vessel below its bifurcation, and where the embolus must have been placed between these two points. Here, therefore, there was total blindness except in the area over which the macular artery is distributed.

Case II. furnishes an instance of embolism having occurred in an inferior branch from which a nasal median twig is given off. Accordingly we find that the superior hemianopsia, due to the plugging of the inferior vessel, is supplemented by a partial loss of the lower field, corresponding to the area of distribution of the nasal twig. If a lateral artery which springs from a superior or an inferior branch be blocked, the area of blindness will, of course, vary with the area of retina supplied by this

vessel: thus in Case IV. the temporal horizontal artery, which is plugged, divides into two macular branches, and one running upward; here there is a quadrant scotoma including the macula. But the fact that the scotoma reaches to the periphery suggests to the author that the superior temporal artery, which, when first seen, seven days after the blindness came on, was free may, nevertheless, have been previously blocked for a time.

The peculiarities of the peripheral field in cases of embolism are less easily explained than those nearer the centre. We frequently find small portions of the periphery in which vision is retained, and yet the arterioles springing from the main vessel before its division are always short, and do not reach to the outer part of the retina. How, therefore, explain the retention of vision? Some say the blocking is incomplete, others that there is a peripheral anastomosis with the choroidal vessels at the ora serrata. The fact that in Case III. the blind area encroaches on the lower field in the nasal periphery would seem to indicate that the blocked inferior vessels have supplied a portion of the upper half of the retina on its temporal side. This suggests a likely explanation of at least some of the cases referred to above.

In conclusion the author refers to the question of re-establishment of the circulation, a subject which has given rise to much discussion. The ordinary text-book assertion is that the re-establishment, in so far as it occurs, is due, not to a cilio-retinal anastomosis, but to the lumen of the blocked vessels again becoming free. Cases of evident anastomosis, however, have been reported, and the writer is of opinion that they are more common than is generally supposed. His Case III. is a marked example of such anastomosis. In it the inferior division of the central artery splits into four smaller branches, three of which receive an anastomosing vessel. Behind the point of junction these branches are exceedingly small, almost obliterated in fact, while beyond it they are of nearly normal size.

N. M. ML.

J. SCHÖBL (Prague). *Cysticercus Subretinalis* Triplex. *Centralblatt für prakt. Augenheilk*, April, 1893.

The following unusual case is reported at some length by Schöbl:—

Joseph Z., aged 5, was brought to the hospital on May 10th, 1892. Family history good, and the child's general health was also thoroughly good. About five weeks before consulting the author the parents noticed a peculiar glimmer in the patient's left eye. Previous to this they had never observed anything unusual in it, nor had they suspected any defect of sight.

Examination of the right eye discovered nothing abnormal. The left, also, externally seemed healthy. The lids and conjunctiva were natural, the globe was of normal size and form, and its movements perfectly free. The cornea was clear and the anterior chamber of good depth. Tension slightly up, about $+ \frac{1}{2}$. The left pupil was a little larger than the right, and reacted slowly to light.

A whitish yellow reflex could be seen in the depths of the eye without the aid of any lens. With the pupil dilated and by focal illumination three cyst-like areas of retinal detachment completely separated from each other could be made out. These were oval in shape, of different size, and replaced the greater part of the vitreous. The largest lay to the outer side, and somewhat downwards, stretching from the ora serrata to the posterior pole. The author estimated its length as at least 11 or 12 mm., and its breadth at about 8 mm. The other two detachments lay more to the inner side, the smallest above and the intermediate-sized one below the horizontal equator. The walls of these bladders—if we may use such an expression—were semi-transparent, yellowish white in colour, and thickly beset with small dotted opacities. Here and there a few larger round or oval opacities were apparent, which, however, on careful examination, were found to be made up of closely grouped small dots. On the surface of all three cysts alike ran blood-vessels, which by their distribution and branching, were obviously retinal. Diverse

and very rapid movements of the eye had no apparent effect in altering either the size or form of the cysts, but by very accurate observation it was just possible to detect a slight surface quivering when the globe was quickly moved. Schöbl was able after much trouble, and by using an intense light and high convex lenses, to render the walls of the two larger detachments translucent, and to see, in an occasional lucky moment behind, the separated retina, a membranous structure which seemed to have a bluish, satiny surface, and on which he thought he could detect fine granular opacities.

What remained of vitreous was perfectly transparent ; the fundus was only vaguely discernible ; vision in the eye was reduced to perception of light. There was no pain.

The author arrived at his diagnosis of cysticercus chiefly by a process of exclusion. The condition would not correspond to any of the ordinary inflammatory or non-inflammatory affections either of vitreous, retina, choroid, or sclerotic, but it was just on the cards that it might be a case of glioma retinæ exophytum. But the clear separation of the three cyst-like detachments, the partial translucency of the retina, the condition of the blood-vessels, the quivering surface movement seen on rotation of the eye, and other phenomena present, all argued against such a conclusion. Schöbl was, therefore, driven to infer that the appearance must be due to subretinal, parasitic cysts, and accordingly made a definite diagnosis of cysticercus subretinalis triplex. Further consideration, however, inclined him to the belief that the disease would probably turn out to be echinococcus subretinalis rather than cysticercus. For one thing, the age of the patient was strongly against cysticercus but not against echinococcus. Schöbl has himself repeatedly diagnosed, and more than once operated on cases of orbital and subconjunctival echinococcus in children of about the patient's age. Again, the number of the subretinal cysts was opposed to the known history of cysticercus in this situation. It is an extremely rare occurrence for it to be multiple—indeed, only two such instances are recorded in the literature of the subject (Becker and A. Græfe).

The further course of this case was not of any special interest. There were occasional symptoms of a slight cyclitis, with fleeting attacks of vascular episcleral injection. The anterior chamber became shallower. The three retinal cysts gradually lost their transparency, and it became more and more difficult, and at last impossible, to make out any structure behind the retina, as had been done at an earlier stage of the disease. Finally, acute pain set in, so that the writer was obliged to remove the globe on July 6th—two months after the case was first brought to him. The wound healed normally, and the patient was dismissed in a few days.

The eye was imbedded in celloidin and sections cut in series. The cysts were found to be shrunken and very brittle, and it was a difficult matter to get a complete section and to see their exact condition. It was impossible at first to determine whether the disease was due to cysticercus or echinococcus, but in the end the cysticercus scolex was discovered in the wall of one of the larger cysts so that all doubt as to the diagnosis was dispelled.

N. M. ML.

J. SCHÖBL (Prague). Cylindroglioma of the Retina. *Centralblatt f. Augenheilk.* April, 1893.

We report briefly the following case as one of some interest.

M. P., a girl of $5\frac{1}{2}$ years, was brought to the author in 1882 with the history that the parents had accidentally discovered a short time before that the child's right eye was nearly blind. Family history good. Patient herself, though of fragile build, seemed healthy.

There was no external change in the right eye; tension was not raised; the anterior chamber of normal depth. The iris acted well to light, and the media were clear. After the pupil had been dilated a faint yellow reflex could be seen in the interior of the globe.

Ophthalmoscopic examination showed that the disc was somewhat red and not sharply defined. In the neighbourhood of the papilla, the retina was of a whitish yellow colour, opaque, and studded with intensely white spots. Retinal vessels perfectly normal. The whitish yellow area of retina round the disc was irregular in shape, spreading further in and up than out and down; it projected nearly 2 mm. beyond the rest of the retina, which was unchanged. Vision = hand movements at 3 metres.

Schöbl diagnosed the case as one of diffuse glioma exophytum. It was impossible to obtain the parents' consent to enucleation, and the patient was not again seen by him till five months later.

The appearance now had greatly changed. The right eye showed a good deal of episcleral injection. Tension nearly + 2, media clear, anterior chamber very shallow—indeed almost abolished—iris discoloured, the pupil wide, reacting neither to light nor to mydriatics. The retina was totally detached. Here and there the intense white spots above referred to could be seen; the retinal vessels were recognisable but untransparent, and showed no movement. Patient complained of great pain. Vision entirely destroyed. The eye was removed in July, 1882, and hardened for microscopic examination. The wound healed quickly, but the author knows nothing of the child's further history.

Macroscopic Examination.—The globe is 22 mm. long and nearly as broad. The iris and lens are pressed against the posterior surface of the cornea; the choroid, which is adherent to the sclerotic, shows on its surface numerous small gliomatous nodules. There is a complete funnel-shaped detachment of the retina; the latter is thickened, but not equally throughout, varying from 2 to 4 mm. The upper part of the retina, which stretches from the posterior pole of the lens almost horizontally to the ciliary region, is not thickened, but, like the choroid, is beset with numerous small nodules of glioma. Sections of the thickened part of the retina have, even to the naked eye, a well marked dendritic appearance which is somewhat unusual. The optic nerve is not affected by the new

growth. The interspace between the detached retina and the choroid is filled with fluid containing no formed structure.

Microscopic Examination.—The thickened part of the retina shows gliomatous degeneration throughout. The glioma cells contain large nuclei and a very small amount of cellular protoplasm. The intercellular substance is very slight in amount and finely granular. It can only be seen with difficulty.

The distribution of the glioma cells is of interest. Fresh glioma cells which take hæmatoxylin staining are found exclusively in the immediate neighbourhood of new blood vessels, and form a thick sheath around them, while in the spaces between these sheathed vessels only broken-down glioma cells, which cannot be stained with hæmatoxylin, are found. The boundary line between these two kinds of cells is very sharply defined. It is owing to this clear definition that the dendritic appearance previously referred to is so obvious. The small gliomatous nodules on the surface of the choroid and in the pars ciliaris retinæ contain no blood vessels. The blood vessels for the most part appear bordered, somewhat thickened, here and there showing hyaline degeneration and sometimes partial or even complete obliteration.

Putting this histological description shortly together, we find in the area of affected retina a very marked development of new blood vessels whose walls are usually thickened and degenerated, and which appear enclosed in an envelope of glioma cells. To this new growth, which seems to be of mixed character, the author has given the name of cylindroglioma.

He has in his collection an example of cylindrosarcoma of very similar formation. An analogous cylindrosarcoma which had been removed from the lachrymal sac and examined histologically by von Recklinghausen has been described by von Graefe. Still another instance of cylindrosarcoma, in which the alteration of the vessels is even more marked, has just come under the author's notice.

Vascular changes in cases of glioma, such as thickening of the walls, hyaline degeneration, and obliteration have frequently been observed; but the writer is not aware of any previous case in which the development of new blood vessels has attained so high a degree, or in which the close relation between the stain-taking glioma cells and the blood vessels is so striking.

N. M. ML.

T. J. SUTPHEN (Newark, N.J.). **A Case of Sympathetic Neuro-retinitis with Plastic Iritis. Recovery. Microscopic Examination of the Enucleated Eye.** *Archives of Ophthalm.* xxii., 1.

This case is shortly reported, and its interest lies in the fact that a careful microscopic examination was made of the excised globe and the portion of nerve adhering to it.

A. B., a healthy boy, 5 years of age, injured his right eye with the prongs of a table-fork. At first there was little sign of inflammation, and it was not discovered till about two months afterwards that the child did not see with the eye. When examined by the author the globe was smaller than the other, tension low, disc discoloured and bulging, and there was a yellow reflex from the vitreous chamber. Cornea scarred, and a ciliary cicatrix was detected; vision lost. In the left eye there was some photophobia, the media were clear but marked neuro-retinitis was present, the neuritis being more intense than the retinitis. The injured (right) globe was removed the next day. The wound quickly healed, and the left eye gradually but completely recovered.

Fluid from the nerve stump was placed on microscopic slides for examination, and the eye immediately placed in a sterilized bottle. The microscopic report is shortly as follows:—At the lower sclero-corneal margin is an in-

drawn cicatrix involving the ciliary body. There is a fibrous membrane stretching across the globe behind the lens—evidently the result of plastic cyclitis—which has produced a total retinal and partial ciliary detachment. A diffuse cellular infiltration is present in the posterior part of the choroid, more particularly in the neighbourhood of the disc, and there are patches here and there of more intense infiltration. The optic nerve (intra-ocular part) shows atrophy in its early stages like those in the separated retina. Otherwise the nerve and its sheath are normal. The examination of fluid from the nerve for bacteria gave a negative result. Gelatine tubes inoculated with scrapings of the nerve after sterilization of the surface, and with fluid from the interior of the eye, were sterile. No micro-organisms were found in sections of the eye after hardening in alcohol.

“The case is such a clear one,” says the author in conclusion, “and the examinations for bacteria were so carefully made, that it serves to establish the fact that sympathetic inflammation of the nerve and iris may occur without the existence of migratory germs, traceable with the means at our disposal thus far.”

It should be stated that the microscopic examination was made by Dr. Ward A. Holden.

N. M. ML.

ED. MEYER (Paris). Serous Tenonitis, caused by a *Cysticercus*. *Revue Générale d'Ophtalmol.* April, 1893.

The patient, a boy whose age is not mentioned, was first brought to Meyer at the end of January of the present year. For a month he had complained of diplopia; he held his head far back in order to see objects at a distance, and

for some days the parents had noticed that the left eye remained stationary, while the left upper lid drooped. His general health was good; occasionally there was a feeling of pricking in the eye with frontal headache.

Meyer's examination confirmed the truth of the parents' observations. There was a slight drooping of the left upper lid, and the immobility of the left globe was almost complete. He could not move the eye either upwards or downwards, but could turn it a very little towards the nasal, and slightly more to the temporal side. The pupil was not dilated, and reacted normally; accommodation was normal, there was no appreciable exophthalmos, and no sign of conjunctival irritation. It was, in fact, a case of ophthalmoplegia externa, whose cause was not very apparent. A nuclear organ did not seem likely, seeing that only one eye was affected and that the child had never had any symptom of cerebral disease. A basilar cause would certainly not have left the sphincter iridis and the ciliary muscle unimpaired.

Pressure on the edge of the orbit did not elicit any sensitiveness which might suggest a periostitis. In passing his finger in between the globe and the roof of the orbit, the author convinced himself that in spite of the absence of any apparent exophthalmos, still the eye was very slightly more prominent than the other, but not more so than might easily be accounted for by a paralysis or relaxation of the extrinsic muscles.

In this state of uncertainty, Meyer resorted to the use of the thermometer as designed by Gradenigo, of Padua, which is so formed that the bulb can easily be placed in the oculo-orbital groove; he found that the temperature on the left side was $\frac{6}{10}$ of a degree higher than on the right, and decided accordingly that there must be some inflammation in progress at the back of the left eye.

Acting on this assumption he prescribed frequent hot applications; after forty-eight hours of this treatment a slight conjunctival redness made its appearance at the lower border of the cornea, and in the middle of this red patch there was a yellowish prominence about as large as a

small pea. An incision was made at this point, the author hoping to evacuate an abscess, but although the opening was of considerable size, no pus escaped; and a probe, introduced at the same time, would not advance in any direction. The fomentations were continued for another day, and then the author found that on pressing the globe from before backwards, a whitish vesicle appeared in the wound; by a little manipulation he was able to remove this vesicle completely and secure it in a watch glass. It was rather more than a centimetre in length, somewhat constricted about its middle, and contained at one extremity a small nearly white body, oval and transparent, in which movements were distinctly visible for several seconds. It proved to be a cysticercus of *tænia solium*. Meyer was now able to introduce a probe, which travelled more than four cm. towards the apex of the orbit. Hot applications were continued for a week, and the wound explored with a probe each day, but no drop either of serum or pus was ever detected. The opening was then allowed to close. Movement of the globe towards the nasal and temporal sides was re-established in a few days, but in the downward direction recovery was slower, the superior oblique for some time acting alone in this movement. Up to the date of writing (April 15), there was no recovery of upward motion, and a slight ptosis was also present. The very little protrusion forwards on the left side, about which there had at first been some doubt, disappeared, and the temperature of the two eyes became the same. Vision, which had sunk to $\frac{1}{3}$ before the expulsion of the cysticercus, reached again the normal acuteness after that event.

If he grants that the presence of the cysticercus was the cause of the affection which has been described, it remains for the author to explain its action. Meyer ascribes the ophthalmoplegia and the other phenomena present to a tenonitis which had been set up by the cysticercus. A direct action on the oculo-motor nerves may, he thinks, be excluded, as there was neither mydriasis nor paralysis of accommodation. In the same way he sets aside the possibility of any general cellulitis, which, had it occurred,

would undoubtedly have provoked more definite symptoms than were observed, and in particular would have given rise to a distinct exophthalmos.

A case very closely analogous to that here described has been published by Professor Sgrosso, of Naples. In his case, however, the cysticercus was not discovered complete, but only the hooklets, while another point of difference between the two was the presence of pus in the one (Sgrosso's) and not in the other.

Meyer concludes his paper with a brief reference to the question, already much discussed, as to whether the cysticercus produces its inflammatory effect by means of infectious germs which find an entrance with it, or by the irritating chemical action of the substances which it secretes. He adheres to the latter view, at least in the present case, and remarks in passing, that in his opinion the inflammation resulting from intra-ocular cysticercus is generally set up in this way.

N. M. ML.

LEOPOLD WEISS (Heidelberg). The Diagnosis of Sympathetic Ophthalmia. *Archives of Ophth.*, xxii. 1.

At the last meeting of the Ophthalmological Congress at Heidelberg, the question of the difficulty of deciding whether an inflammation occurring in the second eye some time after the other had been injured was or was not a true sympathetic ophthalmia, came up for discussion.

The subject is one of great practical importance, more especially in its obvious bearing on the claims of the injured person to accident insurance.

The following is a case in point:—H. E., aged 28, boiler maker, was on February 11th, 1887, badly injured in the left eye by a piece of wire. The cornea and iris were perforated and the lens wounded. Vision was reduced to perception

of light. In spite of attempts to save the eye, such marked inflammation set in, and the other globe became so sensitive to light, that enucleation was performed on February 16th. Things went well, and the patient was discharged eight days afterwards. The right eye was now free from irritation, and had full accommodation and vision. An artificial eye was used from the end of March, but the man did not return to work till October of the same year. He worked for nine months without any complaint.

In August, 1889, he came again to the author, saying that for some time he had not seen so well, and that he had especially noticed this failure of vision when he had fine work on hand. $V = \frac{6}{36}$, pupil active. Globe slightly sensitive to pressure, but no marked tenderness. Disc suggestive of early neuro-retinitis. The stump of the excised eye was not painful on pressure. Patient readmitted, and treated with mercurial inunctions and kept in a dark room. Vision at first slightly improved, and then became worse. The disc gradually got pale and more atrophic, while some of the vessels showed white lines along their borders. Bright yellowish spots were seen in the fundus, and there was a good deal of pigment change. Field almost normal, but red and green were not correctly recognised. Urine free from albumin.

Was this a case of true sympathetic ophthalmia or not? If we decide that it was, there are two obvious difficulties which immediately present themselves, viz., (1) the long interval between the appearance of the disease and the enucleation, and (2) the local signs. As a rule, sympathetic ophthalmitis begins as an irido-cyclitis, and in the end affects the whole uveal tract; less commonly it manifests itself as an optic neuritis. It is quite conceivable that the first signs of the disease may appear at the nerve entrance of the sympathising eye, if we grant that the morbid elements travel along the nerves by way of the chiasma. In the first part of their journey they must travel in the same direction as the lymph stream, in the second in the opposite direction. It is known, however, that micro-organisms in a lymph channel can progress against the stream.

Other authors have also recorded instances of "sympathetic optic atrophy." Dransart regards the disease as a peculiar form of sympathetic ophthalmia, and says that it is frequently accompanied by other tissue changes, choroidal atrophy, &c. With reference to the choroidal changes in his own case, Weiss sees nothing unusual; he had the opportunity some little time ago of examining Deutschmann's preparations from the animals he had experimented on. Near the optic nerve entrance the choroidal changes were very marked.

Although an adherent of the migration theory he does not believe that the optic nerve is the only route of transmission of infection from one eye to the other. If so, why should the symptoms of the disease usually appear first in the anterior and not the posterior half of the globe? The case is one which presents many difficulties, but the author regards it as a sympathetic ophthalmitis, although not of the usual type.

N. M. ML.

We have been requested to remind intending contributors to the Ophthalmological Section of the International Medical Congress, which meets at Rome in September of this year, that they should forward the titles of their communications to the secretary, Dr. Parizotti, with as little delay as possible. Forms for this purpose may be had on application to Mr. MacLehose, 13, Queen Anne Street, Cavendish Square, W.—[ED.]

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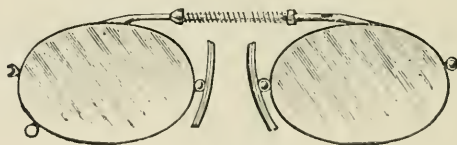
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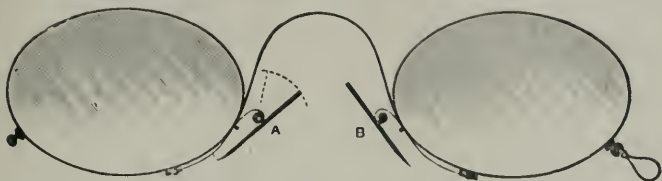
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